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15. (Twice amended) A method as claimed in Claim 1 wherein the metallic layer is deposited as a piezoelectric layer of an acoustic wave device.

16. (Amended) A method as claimed in Claim 13 wherein the metallic layer is deposited as a piezoelectric layer of an acoustic wave device.

Kindly add the following new Claim 17:

17. (New) A method as claimed in Claim 14 wherein the metallic layer is deposited as a piezoelectric layer of an acoustic wave device.

REMARKS

Summary

By this Amendment, Claims 4, 6-10 and 13-16 have been revised, Claims 1-3, 5 and 11-12 have been canceled, and new Claim 17 has been added for the Examiner's consideration.

Particularly, the Examiner's attention is directed to the amendment of Claims 4, 9, 13 and 14 into independent form.

Accordingly, Claims 4, 6-10 and 13-17 are now pending in the application.

Election/Restriction

The finality of the election/restriction requirement is acknowledged. By this Amendment, non-elected Claims 5 and 12 have been canceled.

Double Patenting

By this Amendment, dependent Claims 15 and 16 have been revised such that they now clearly further limit the scope of the respective Claims 1 and 13 from which they depend. It is noted that new Claim 17 is similarly worded and depends from Claim 14.

Specification

The Examiner's objection to line 11, page 6, of the specification is not understood, and accordingly, clarification is requested. The subject passage means that hydrogen is being incorporated as H and not H_2. One would see this difference, for example, if the hydrogen was supplied as ammonia, rather than molecular hydrogen gas or, as the Examiner suggests, the hydrogen was disassociated by a plasma to form atoms, free radicals or ions.

In the event that the Examiner maintains the objection, Applicants respectfully request that a more detailed explanation be provided as well.

Arrangement of the Specification

By this Amendment, section headings have been added to the application as suggested by the Examiner.

Claim Objections

By this Amendment, Claim 2 has been canceled, and Claim 14 has been revised to delete titanium nitride. It is thus believed that the Examiner's claim objections have been overcome.

35 U.S.C. ¶112, first paragraph

Claims 3, 11 and 13 were rejected under 35 U.S.C. ¶112, first paragraph. The rejection to Claim 3 has been rendered moot by the cancellation thereof. The rejections to Claims 11 and 13 are traversed for the same reasons as stated above regarding the objection to page 6 of the specification.

11+13 atomic hydrogen

35 U.S.C. ¶112, second paragraph

By this Amendment, Claim 9 been revised to generally improve the clarity thereof and to correct the various informality noted by the Examiner. It is thus believed that the rejection under 35 U.S.C. ¶112, second paragraph, has been overcome.

35 U.S.C. ¶102 and ¶103

Claims 1-4, 6-8, 11, 13 and 14 were rejected under 35 U.S.C. ¶102 or ¶103 as being unpatentable over Lee et al., taken alone or in combination with Ameen et al., for the reasons stated at pages 5-7 of the Office Action. Applicants respectfully traverse this rejection with respect to the now-pending claims.

In the Office Action, the Examiner states:

> "Lee et al. disclose a disclose depositing a metallic layer on an exposed surface of previously deposited insulating layer on a substrate including treating the exposed surface with hydrogen or a gaseous source of hydrogen in the presence of a plasma prior to deposition of the metallic layer (Col. 10, lines 17-26 and col. 7, lines 50-52) and inherently the hydrogen treatment is such that the x-ray diffraction peak half width on a crystallographic plane of a deposited metallic layer is narrowed (Col. 19, lines 60+) wherein the metallic layer suffers a modification of its crystallographic structure wherein the metallic layer is aluminum or an aluminum alloy (Col. 11, line 46), because the same materials are treated in the same manner as in the instant invention."

Applicants respectfully disagree.

There are many different processes which can be performed using hydrogen and those described in Lee and indeed, Ameen, relate to either etching or the termination of oxides at the bottom of contact holes or where the hydrogen is being used to reduce TiCl to Ti and form volatile hydrogen chloride. In that case it has no impact on the surface at all. In fact when Lee sets out to terminate the

surface portion of the underlayer, he is performing a process which is gentle and needs to be gentle on the exposed contacts.

Given these range of processes it seems unreasonable for the Examiner to conclude that the features of present claims are inherently met.

In addition, Applicants respectfully disagree that a person skilled in the art should take features of the Ameen method, which relates to contact cleaning, and combine them with Lee which is directed to a method of forming a wiring layer. In particular it is not clear why the Ameen process should be used on the underlayer, whereas Ameen would teach you to, if anything, clean the surface of the deposited metal layer. It is to be noted that Claim 4 is directed to the metallic layer being deposited on an exposed surface for previously deposited insulating layer.

Claims 9 and 10

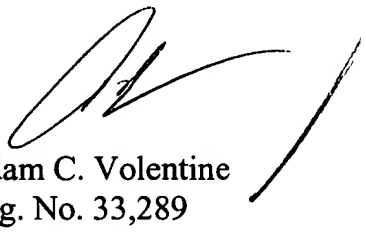
It is noted that Claims 9 and 10 were not rejected in view of the cited references, and that Claim 9 has been amended into independent form by incorporating the subject matter of canceled Claim 1.

Conclusion

No other issues remaining, reconsideration and favorable action upon the Claims 4, 6-10 and 13-17 now-pending in the application are requested.

Respectfully submitted,

KNUT BECKMAN ET AL.

By: 

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ATTACHMENT "A"

Additions/Deletions to the Claims:

4. (Twice amended) A method [as claimed in Claim 1] of depositing a metallic layer on an exposed surface of previously deposited insulating layer on a substrate, said method comprising:

treating the exposed surface with hydrogen or a gaseous source of hydrogen in the presence of a plasma; and

depositing the metallic layer over the exposed surface,

wherein the hydrogen treatment occurs prior to or during the deposition of the metallic layer, and wherein the extent of the hydrogen treatment is such that the x-ray diffraction peak half width on a crytallographic plane of [a] the deposited metallic layer is narrowed.

6. (Twice amended) [A] The method as claimed in Claim [1] 4 wherein the plasma is an Inductively Coupled Plasma.

7. (Amended) [A] The method as claimed in Claim 6 wherein the substrate is placed on an RF biased platen.

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8. (Amended) [A] The method as claimed in Claim 7 wherein the platen is heated.

9. (Twice amended) A method [as claimed in Claim 1] of depositing a metallic layer on an exposed surface of previously deposited insulating layer on a substrate, said method comprising:

treating the exposed surface with hydrogen or a gaseous source of hydrogen in the presence of a plasma; and

depositing the metallic layer over the exposed surface,

wherein the hydrogen treatment occurs prior to or during the deposition of the metallic layer, and wherein the plasma [means] is supplied by a Reactive Ion Etching process.

10. (Amended) [A] The method as claimed in Claim 9 wherein the hydrogen treatment time is less than 15 minutes.

13. (Twice amended) A method [as claimed in Claim 11] of depositing a metallic layer including the modification of its crystallographic structure by the use of atomic hydrogen, wherein the metallic layer is titanium or a titanium alloy

and the modification includes the enhancement of the <002> crystallographic orientation of the titanium or alloy.

14. (Twice amended) A method [as claimed in Claim 11] <u>of depositing a metallic layer including the modification of its crystallographic structure by the use of atomic hydrogen,</u> wherein the metallic layer is copper, copper alloy, aluminium, or an aluminium alloy [or titanium nitride] <u>and</u> the modification includes the enhancement of the <111> crystallographic.

15. (Twice amended) A method [of forming an acoustic wave device including depositing a metallic layer in accordance with a method] as claimed in Claim 1 <u>wherein the metallic layer is deposited as a piezoelectric layer of an acoustic wave device</u>.

16. (Amended) A method [of forming an acoustic wave device including depositing a metallic layer in accordance with a method] as claimed in Claim [11] <u>13 wherein the metallic layer is deposited as a piezoelectric layer of an acoustic wave device</u>.